Dr. E. M. Houghton, Detroit: I am particularly glad to note that Dr. Hatcher's statements relative to the toxicity of strophanthus coincide almost exactly with those I made in a paper before this section ("The Pharmacologic Assay of the Heart Tonics," The Journal, Oct. 22, 1898), I think exactly ten years ago. I pointed out that the toxic dose of the strophanthins on the market varied from 1 to 90; in other words I found with different samples of strophanthin obtained in this country and Europe one strophanthin ninety times as strong as another. At the same time I called attention to the variability in the activity of tincture of strophanthus and preparations of digitalis, and proposed a method of determining the activity of the heart tonics and especially of the tincture of strophanthus. I used as a standard 0.00015 c.c. tincture of strophanthus per gram body weight of frog as the minimum fatal dose when injected into the abdominal lymph sac.

Since then it has been my privilege to examine or have examined hundreds of samples of tincture of strophanthus, and I have adhered to that standard. I have in course of preparation just now a paper on the heart tonics, in which I shall enter more fully into the question of standards for digitalis and strophanthus. I have found the tincture of strophanthus prepared according to the seventh revision of the U. S. P. approximately ten times as active as the corresponding fluidextract of digitalis. In other words, the standard I have adopted for 5 per cent. tincture of strophanthus, 0.00015 c.c. per gram body weight of frog, is exactly one-tenth that for fluidextract of digitalis (0.0015 c.c.), when similarly injected.

Examination of these figures shows that strophanthus is two hundred times as active as digitalis, in terms of crude drug. It seems to me from the very large number of samples examined of different preparations of these two drugs that the figures just cited as standards for their strength are reasonable as representing the activity of average samples of first-class drug.

Dr. Robert A. Hatcher, New York: The difference in toxicity of strophanthus and digitalis is largely based on the length of time required. It is well known that digitoxin reacts slowly. It will probably take two hundred times as much digitoxin as of strophanthin to kill in an hour, but if you take the minimum fatal dose, regardless of time, the difference is much less. Fraenkel found that the minimum fatal dose of digitoxin did not kill within eight days (cat). An enormous dose is required to kill within an hour, whereas ouabain is quickly fatal in minimum fatal doses. That is probably why Hedbom, experimenting on frogs, found ouabain eighty times as toxic as digitoxin. As to variability of the tincture, I do not deny that it may exist, but there is no excuse for any one's failure to obtain reliable preparations, and we can obtain reliable preparations of strophanthus without limiting ourselves to those of one manufacturer. I compared the tincture made by Burroughs, Wellcome & Co. with those of Parke, Davis & Co. and Squibb, and with those made from seed obtained from Gilpin, Langdon & Co. and one from a specimen of seed that had been in our laboratory for nearly twenty years, and all were found to be of practically the same strength. Samples were purchased of the east side drug stores in New York and the better class of stores were purposely avoided. There is no reason why the crystalline strophanthin should be confused with the official, but the difference in toxicity has not been sufficiently emphasized. Ouabain is the most toxic; strophanthin, which is methyl ouabain, is about one-half as toxic, and acocantherin, which is dimethyl ouabain, is about one-fourth as toxic; this is very suggestive as to the effect of methyl groups on the toxicity. There is absolutely no reason why crystalline strophanthin should not be prescribed. I believe that Dr. Edmunds must have used much larger doses of digitoxin than the minimum fatal. There is certainly no such difference in the toxicity of strophanthus and digitalis as suggested, for no one could use 3,000 (50 × 60) minims of tincture of digitalis daily without effect. Haynes states that strophanthus given by the mouth is fifty times as toxic as is digitalis, but that is absolutely untrue, at least under ordinary conditions.

DEPARTMENTS OF HYGIENE UNDER BOARDS OF EDUCATION *

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In the modern scientific business life the technical business expert has a permanent place. The erection of a city structure involves the cooperation of engineering and architectural experts as never before. Electric and mining work involves groups of experts, each connected with some special phase of the subject. School boards have had new problems thrust on them, and the employment of business agents and building experts has become indispensable. It is my belief that the group of problems centering about the health of school children demands technical treatment as highly specialized as that required for other departments. A few statements of fact will bring out the necessity of the measure here advocated.

On good eyesight depends to a large degree one's ability to conduct successfully the affairs of life. Notwithstanding the great damage or degeneration that the vision of American school children is constantly undergoing, there is hardly a school board in America that has in its employ a technical expert to decide on questions relating to eyesight. School-books are adopted, but no standards have been established based on adequate research as to the length of lines for the various ages, size of type, size and stroke of letter in connection with the lines, the width of the margins, the use of halftones as compared with outline drawings, the use of dead-finished as compared with coated paper, and similar questions. There are authorities on many of these matters, but we have no experts in the employ of departments of education who can speak authoritatively from the standpoint of special study made of these conditions as they exist in American schools.

This extraordinary condition with reference to the problem of vision does not stand alone. Through the school we have changed the life of the child from one of predominant activity to one predominantly sedentary in character. During five hours of the school day for ten months in the year children are obliged to be seated for the major portion of the time. So extensive a readjustment of the life habits of the young of a species has never before taken place. Its effects on digestion, circulation, nutrition and posture are as yet unknown. Yet there is not employed by any board of education in America one expert to make a special study of this group of problems centering about the changed conditions of life as they exist under the conduct of the modern school.

The returns from examinations made by competent physicians in all parts of America indicate that there are many children in all parts of America whose school progress is hindered and whose prospects in life are lessened by hypertrophied tonsils and adenoids; and yet up to the present time there is not employed by a department of education in America a technical expert to study the reasons for the occurrence of such growths, particularly as related to school life, or the means of prevention. The only thing that is being done is to attempt to operate on the tonsils and adenoids after they have grown.

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* A paper prepared for the Section on Hygiene and Sanitary Science of the American Medical Association, Chicago Session, 1908, but not read.

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We know that growth is more fundamental than education; that when educational demands are too severe, growth is interfered with; yet there is not a school in America that systematically weighs and measures its children to ascertain whether or not they are growing normally, and then readjusts the school tasks to fit this fundamental physiologic condition.

We know that nervous diseases among children are increasing. We believe that these disorders are related to the increased tension on the children. Many believe that this is due in part to the tasks imposed by school life, and yet there is not a board of education in America that is employing an expert to ascertain the facts with reference to these problems.

The fatigue of overwork, the fatigue resulting from home study—these we all recognize to be serious clogs on development; and yet our courses of study all over America are constructed without the guidance of experts whose authority is based on investigation of these matters.

These are some of the facts which lead us to believe in the employment by departments of education of technical experts who shall work on these problems—experts who shall have power with reference to these matters, just as other experts in the employ of the departments of education have power with reference to their special lines. School buildings are not erected without the direction of expert architects. The recognition of the technical expert in medical lines is just as necessary as it is in architectural lines. It is not sufficient to secure the best available authority on these subjects. No oculist, no group of oculists at the present time possesses the information needed to answer the questions that arise in connection with the vision of school children under school conditions. It is a specialty within a specialty. We do not need authority; we need evidence. And then we need power within departments of education to see that the fundamental condition of successful human life, namely, health, is properly conserved. To this end there should be organized under every board of education a department of school hygiene having adequate financial support and administrative power.

It may be safely affirmed that until this is done, until the school itself attacks these problems with the implements of science, no contribution of permanent value to physical development will be made in the field of education. Obviously the detection of contagious disease in the schools, involving daily visits and the power of the law to act, belongs in the nature of the case to the board of health. Quite as obviously also the care of ventilation, recesses, lighting, seating, exercise, hours for home study, must rest with the board of education. In other words, where the object is the protection of the community the board of health is responsible, and where steps necessary to the proper education of the individual are concerned the board of education is responsible. If these propositions are true they leave but one division of the topic open to discussion, namely: who should conduct the examination of school children for defects likely to interfere with proper growth and education, such as adenoids, defective eyesight and hearing?

Whoever does this work, it is further obvious that such records must follow the child from grade to grade and also from school to school; that they must be considered by the grade teachers, and, most important of all, that each case must be consistently followed up, so that, as far as possible, such disabilities may be removed; that is, they are an important part of the school records and must be so made and organized as to be available to the school authorities. So the board of education must at least be one of the active parties in such medical examination.

1 Madison Ave.

THE CAUSES AND THE TREATMENT OF BACKACHE IN WOMEN

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Backaches in women are so common and so far-reaching in their effects that a thorough understanding of them is of the greatest importance to members of the medical profession, to say nothing of their patients. A much too large number of women are its victims. Much of the hysteria and neurasthenia from which they suffer appears to be caused by the nervous leak due to the constant backache, much in the same way that eyestrain gives rise to headaches and other nervous disorders. Yet, if we turn to our text-books, we find practically nothing on the subject.

CAUSES

First, we must determine the cause of the backache. The causes of backache below the dorsal region are numerous, and it is essential for success in its treatment that its origin be accurately diagnosed. The causes are rheumatism, strains, neuralgia, sacroiliac disease, caries of spine, fracture of spine (especially of the coccyx), hemorrhoids or other rectal disease, pendulous abdomen, disease of any of the internal pelvic organs and cellulitis of the uterosacral ligaments.[1]

It is especially with the last two that this paper has to deal.

As a matter of fact the question commonly arising is whether the cause of the backache is pelvic disease, or if it is a strain or rheumatism. The backache of rheumatism and strains are usually seated in the lumbar muscles; and in the former, the pain often radiates down the sciatic nerve. In rheumatism and strain the backache is increased by bending forward so as to put the lumbar muscles on the stretch. This has no effect on the pelvic forms of backache.

Pelvic backache is of two kinds. In one there is pain and tenderness at the fourth and fifth lumbar vertebræ, where the spinal nerve center governing the internal pelvic organs is situated. This pain and tenderness may be due to any painful disease of the internal genitals, and is simply a protest on the part of the center against being constantly irritated. The treatment of this form, to be permanently efficacious, necessitates the cure of the underlying disease.

In the second variety there is a tender spot on either side of the second sacral vertebra, which, it is my contention, is due to cellulitis of the uterosacral ligaments. I shall state my grounds for this theory later.

There are two diseases that might be mistaken for the pelvic forms of backache if only the site of the pain were considered. One is incipient sacroiliac disease; this gives rise to pain and tenderness at the sacroiliac joint, but it is rarely bilateral, and concussion of the iliac bone

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[1] Besides these conditions, Satterthwaite, of Boston, describes conditions of softening of the sacroiliac cartilages occurring at the menstrual period, analogous to that which occurs during pregnancy, also strains and subluxations of these joints.

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